Future Development Options: South Carolina's Alternative Fuel Infrastructure

South Carolina
State Budget and Control Board
General Services Division
Office of State Fleet Management

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Executive Summary

Beginning in January of 2002, the South Carolina Budget and Control Board, General Services Division, Office of State Fleet Management conducted a survey of local governments, along with state and federal agencies to assess the presence of alternative fuel vehicles (AFVs) relative to existing alternative fuel infrastructure. These results of the survey were examined in order to formulate sound development recommendations for alternative fuel infrastructure throughout the State of South Carolina.

At the conclusion of State Fleet Management's survey, it was evident that significant infrastructure development would be needed to promote the refueling of AFVs with alternative fuels. Currently over 90% of all alternative fuel vehicles in the state are capable of running on ethanol-blended fuel (E-85, which is 85% ethanol and 15% regular unleaded gasoline). Since these automobiles are flex-fuel vehicles (that is, they can operate on either unleaded gasoline or E-85), they continue to be operated on gasoline, and minimal infrastructure has been developed. Currently only two E-85 refueling sites are in use, the United Energy Distributors site in Aiken and the Department of Health and Environmental Control site in Columbia. Only the United Energy site is open to the general public. The density of alternative fuel vehicles centered on large cities along major interstate highways as shown in the density maps included in this report (see Appendices C-1 through E-1).

Background

Since the Energy Crisis of 1973 many trends have been observed in energy and energy use in the United States. Before 1973, most Americans had been accustomed to increasing energy use without much thought about the energy supply. In October 1973, the OIL Producing and Exporting Countries cartel, generally known as OPEC, introduced an oil embargo driving prices up by decreasing the available supply. As the supply of fuel dwindled, Americans began to be more concerned about U.S. dependence on foreign sources of oil. Oil prices remained high through the 1980s, as the supply remained tight. Meanwhile, government and the oil industry worked to increase domestic oil production and worked to improve efficiency in order to decrease our dependence on foreign oil. However, the trend towards development slowed with the imposition of additional environmental regulations in the late 1980s and 1990s, and the ratio of imported petroleum to domestic production began to shift back towards foreign dependence. As of 1997, imported oil consumption had risen to over 55 billion dollars per year, with over 60% dedicated to transportation.

The use of oil in meeting our transportation needs has more consequences beyond an inordinate dependence on foreign petroleum sources. The increased burning of fossil fuels has caused a significant increase in pollution around the country, even in South Carolina. Pollution is generated through vehicle exhaust emissions, fuel evaporation, fuel transportation, and fuel refining. While none of the 100+ cities that currently fail federal eight-hour ozone standards is located in South Carolina, the Bureau of Air Quality predicts that several areas in the upstate may soon fail to meet these standards. This additional pollution has required the installation of high-cost emissions equipment on all new automobiles. Finally, the pollution created with the burning of fossil fuels has reportedly contributed to health problems throughout the country, that are thought to cost over 40 billion dollars annually in health care expenses.

Largely because of these concerns, the United States Congress passed legislation to promote the use of AFVs in order to enhance air quality and reduce dependence on foreign oil. The Clean Air Act with its subsequent amendments required local compliance with certain air quality standards. The Energy Policy Act of 1992 (EPAct92) required federal and state fleets, as well as private sector fuel providers such as utilities, to begin purchasing AFVs in 1994. Private fleets in high pollution areas with 10 or more vehicles were to follow suit in 1998. A popular analogy used to describe this legislation was the "*Which came first, the chicken or the egg*" argument. While covered entities were required to purchase AFVs, little or no infrastructure existed to support them, and in the case of state governments, there was no accompanying requirement to actually use alternative fuels. Therefore

significant amounts of taxpayer funds were expended to meet these federal acquisition mandates with no tangible results achieved.

As it affects states, EPAct92 covers state fleets that operate 50 or more qualifying light duty vehicles (QLDs are vehicles that are under 8500GVW, non-law enforcement, and not garaged at home) with 20 or more centrally fueled or capable of being centrally fueled, and located within metropolitan statistical areas (MSAs). MSAs are those areas that have a population of 250,000+ people in a specific geographical area as of the 1980 census. At the time EPAct92 was introduced, South Carolina contained five MSAs.

State fleets covered under EPAct92 are required to purchase alternative fuel vehicles in accordance with the following schedule.

- 10% of QLD vehicles purchased during model year 1997;
- 15% of QLD vehicles purchased during model year 1998;
- 25% of QLD vehicles purchased during model year 1999;
- 50% of QLD vehicles purchased during model year 2000;
- 75% of QLD vehicles purchased from model year 2001, forward.

These requirements vary for other covered fleets. The Federal Department of Energy has proposed extending AFV purchase requirements to local government and some private sector fleets, and has authority to do so under the current legislation; however, this extension of acquisition requirements has not yet occurred. While these requirements are ambitious, South Carolina continues to comply through the cooperation of agencies operating under a unified State plan.

The presence of increasing numbers of AFVs in the State, along with the desire at all levels of State government to use fuels that help reduce pollution steadily increase the demand for alternative fuels. South Carolina must now decide how to expand the use of alternative fuel vehicles, and develop alternative fuel infrastructure within its borders.

What is an Alternative Fuel Vehicle?

An alternative fuel vehicle or AFV is any vehicle that can operate on at least one alternative fuel. Today, automakers produce dedicated fuel, flexible-fuel, and dual-fuel vehicles. A dedicated AFV is a vehicle that can run only on one type of alternative fuel. A dual-fuel vehicle can run on either an alternative fuel or on a conventional fuel (gasoline or diesel). Dual-fuel vehicles have separate fuel storage and delivery systems for each type of fuel, allowing the vehicle to operate on a full concentration of either fuel. The most frequently purchased AFV type in South Carolina is the flex-fuel vehicle. Flex-fuel vehicles are popular among agencies because they have the lowest acquisition cost among all AFVs. These vehicles can run on any mixture of two or more fuels. An increasing number of automakers are offering the flex-fuel vehicles at little or no additional cost.

What is an Alternative Fuel?

Alternative fuels covered under EPAct92 are those derived from organic materials such as corn, soybeans, or organic waste, natural gas, liquefied petroleum gas (propane), electricity, and/or fuels that contain 85% alcohol (either ethanol or methanol) and 15 % gasoline. Methanol (M-85), ethanol (E-85), natural gas (used as compressed natural gas, CNG, or liquefied natural gas, LNG), liquefied petroleum gas (LPG or propane), hydrogen, electricity, and biodiesel all fall under these categories. Currently in South Carolina, E-85 flex fuel vehicles are most common, with propane, and CNG vehicles making up a small percentage of the total.

The benefits of using alternative fuels include reduction of transportation-based pollutants, less reliance on unpredictable foreign oil supplies, and the promotion of renewable, domestically produced energy sources. These fuels are often less expensive than or competitive with the price of unleaded gasoline; however, the acquisition costs of some AFVs such as natural gas, propane, and electric vehicles can be significantly higher. Hydrogen vehicles are not currently available in any serious number, but are predicted to be far more important during the next two to three decades. Thus the use of some types of AFVs can be cost effective, and can produce other desirable effects.

The Survey

Methodology

State Fleet Management developed surveys to be conducted throughout the state of South Carolina to determine the numbers, types, and locations of alternative fuel vehicles in use, and the availability of corresponding fuel distribution infrastructure. The surveys targeted cities, counties, state agencies, and large federal fleets. In the case of state agencies where the number of AFVs was known, the survey focused on the specific zip codes where the vehicles were actually based. A second survey was conducted to determine the location and capability of infrastructure. This survey included questions concerning accessibility to dispensers, capacity of fuel storage tanks, and acceptance of the State's Wright Express Fuel Card.

As responses were received, all information was catalogued according to city, county, state, or federal agency. Follow-ups were sent to those original survey recipients who had not responded. Since a listing of AFVs owned by each state agency was available, 100% response was achieved on state vehicles. Results pertaining to non-state agencies are dependable only to the extent that accurate responses were received. Furthermore, while many AFVs are in use in private sector applications such as car rental agencies, farm use, business fleets, and so on, those vehicles are not accounted for in this study.

Results were transferred to density maps (see Appendices C-1 through E-2) comparing the presence of known alternative fuel vehicles to the corresponding infrastructure.

Results of the Alternative Fuel Vehicle Survey

City and County Concentrations

The survey found alternative fuel vehicles used in all levels of government. 52% (65 of 124) of city governments responded. Eight of those city governments own AFVs of various fuel types. These vehicles include fourteen flexible-fuel vehicles (E-85), six CNG vehicles, one electric vehicle, and one propane vehicle. It was found that at the municipal level 12 AFVs were on order but had not yet been delivered.

Zip Code	City	No. of AFVs	Fuel Type
29203	Columbia	12* (on order)	Unl/Reg or Ethanol-85
29582	N. Myrtle Beach	4	Unl/Reg or Ethanol-85
29601	Greenville	3	Compressed Natural Gas
29730	Rock Hill	3	Compressed Natural Gas
29640	Easley	1	Unl/Reg or Ethanol-85
29403	Charleston	1	Unl/Reg or Ethanol-85
29720	Lancaster	1	Unl/Reg or Ethanol-85
29622	Anderson	1	Unl/Reg or Ethanol-85

30 of 46 counties (65%)responded to the survey. From the 30 completed surveys it transpired that 12 counties own either flex-fuel (unleaded gasoline/E-85) or propane vehicles. This table summarizes the results:

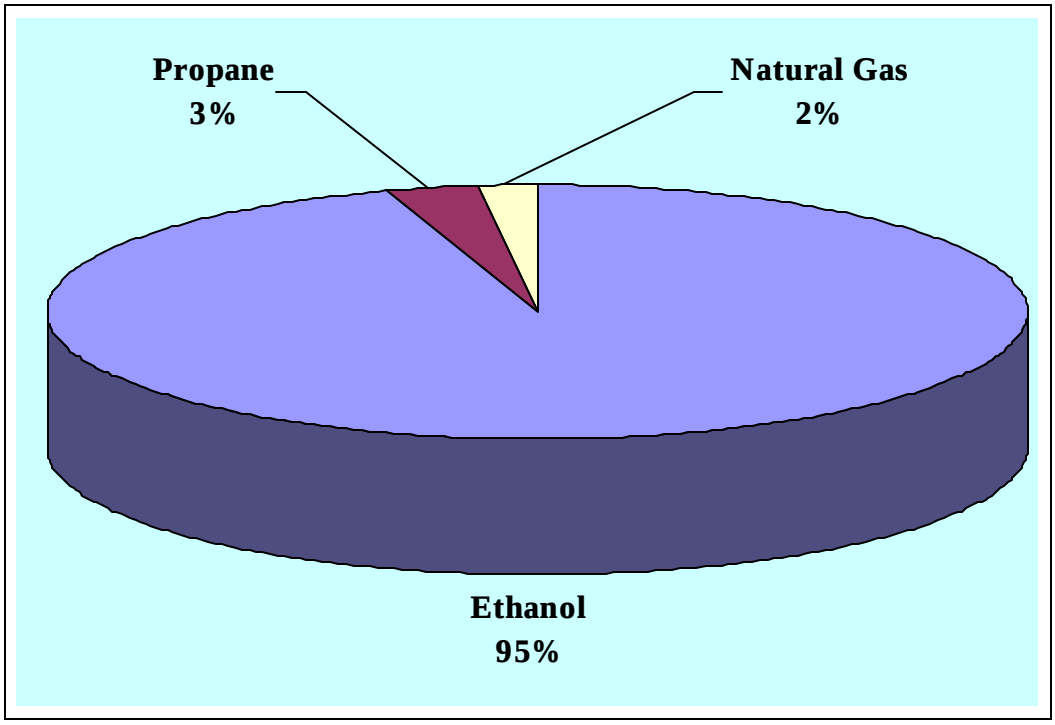
Zip Code	County	No. of AFVs	Fuel Type
29622	Anderson	37	Unl/Reg or Ethanol-85
29405	Charleston	30	Unl/Reg or Ethanol-85
29303	Spartanburg	16	Unl/Reg or Ethanol-85
29902	Beaufort	14	13 Unl/Reg or Ethanol-85 1 Unl/Reg or Propane
29203	Richland	12	Unl/Reg or Ethanol-85
29072	Lexington	9	Unl/Reg or Ethanol-85
29526	Horry	8	Unl/Reg or Ethanol-85
29360	Laurens	7	Unl/Reg or Ethanol-85
29801	Aiken	4	Unl/Reg or Ethanol-85
29745	York	3	Unl/Reg or Ethanol-85
29501	Florence	3	Unl/Reg or Ethanol-85
29483	Dorchester	2	Unl/Reg or Ethanol-85

State and Federal Concentrations

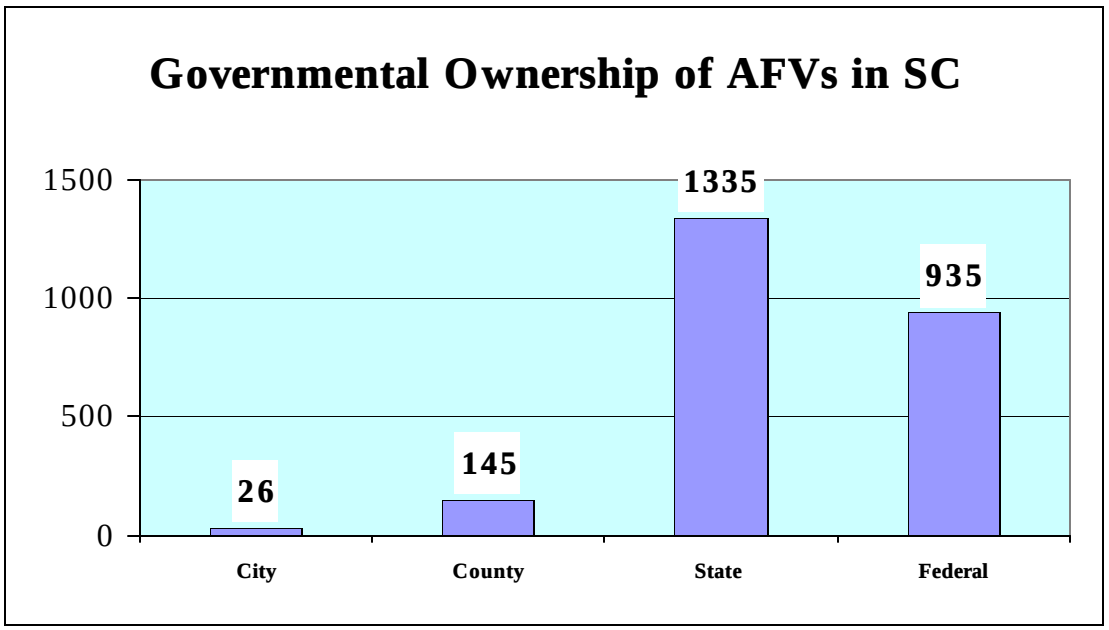
The results indicate that AFVs owned by State and Federal fleets are spread out across the State. (See Appendix A) However, concentrations appear along the major interstate corridors of I-26, I-20, and I-85. (See Appendices C, D and E) There is a high density of AFVs in the Central Midlands region, specifically Columbia, where there are 683 such vehicles. The Savannah River Site has a large federal fleet, giving Aiken a high concentration of 415 vehicles. Charleston (112), Greenville-Spartanburg (82), and Beaufort (75) are also home to a significant number of State and Federal AFVs.

Survey Totals

Totals from the field survey follow the same distribution trends of the State and federal fleets. The areas of Columbia, Beaufort, and Aiken are home to the largest numbers of AFVs in South Carolina. As shown in the figure below, an overwhelming majority were flexible-fuel vehicles capable of running on unleaded regular or E-85 fuel.



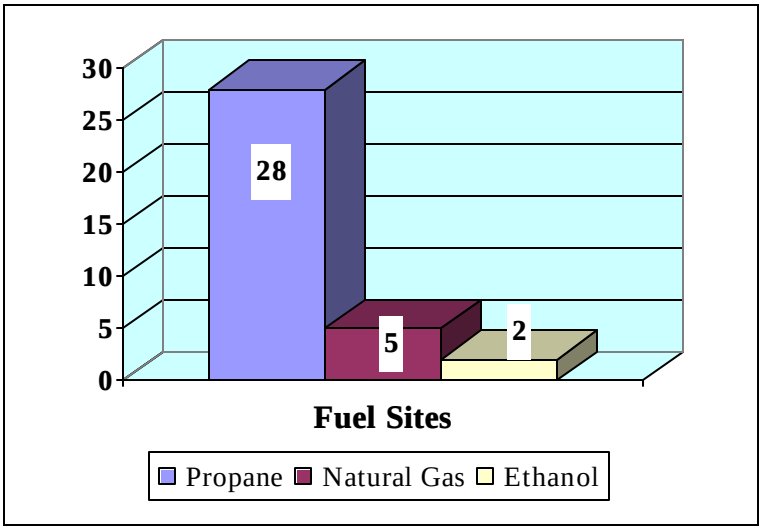
The majority of these vehicles were owned by South Carolina State agencies. The Federal government also maintains a fleet of 935 ethanol vehicles. Multiple counties (12) and cities (8) also housed small numbers of alternative fuel vehicles.



Results of Alternative Fuel Infrastructure Survey

As a result of the infrastructure survey, SFM could only locate two E-85 providers. These stations were found within the city limits of Aiken and Columbia. United Energy Distributors in Aiken is currently the only private sector provider of E-85, biodiesel, and propane fuels that accepts the South Carolina Wright Express Fuel Card and is open to the general public. The Department of Health and Environmental Control recently opened an E-85 station on Bull Street in Columbia. However, this location is not open to the general public. It may only be accessed by government agencies using the South Carolina Wright Express Fuel Card.

Stations currently planned by the SC Energy Office and South Carolina Electric and Gas (SCE&G) will also accept this card. The SCE&G site will offer CNG and may also offer E-85 as well. Four additional CNG refueling sites are currently in use. Unfortunately, these four sites are available only to the owning government agencies. Refueling sites for propane are located throughout the state at various Suburban Propane and Synergy Gas locations. A total of 28 propane sites were identified, but many of these locations are not staffed full-time to provide for vehicle fueling. A number of other propane dispensing sites are known to be in business, but no responses were received from them, and they are not identified in this study.



Discussion

Results show that over 93% of all alternative fuel vehicles in use in South Carolina are capable of running on both unleaded regular gasoline and E-85. Regrettably, alternative fuel infrastructure development has occurred disproportionate to that number with only two E-85 refueling sites supporting these vehicles. Previous alternative fuel infrastructure development in South Carolina was focused on propane. This development may stem from the prevalence of propane as the fuel of choice for rural households and industrial applications. Unfortunately, only 3% of AFVs in South Carolina can operate on propane.

The vast majority of flex-fuel and dual fuel vehicles in the State are currently operating on unleaded gasoline. It is clear that there are not nearly enough E-85 facilities to refuel these AFVs. There is an urgent need for development of alternative fuels infrastructure. This development will promote the use of such fuels, and help accomplish the initial objectives of the Clean Air Act and EPAct92.

Findings and Recommendations

State Fleet Management has found that there is a significant need for alternative fuel infrastructure in South Carolina. It is recommended that the initial focus of development be placed on the expanded distribution and use of E-85. Analysis shows that there are eight potential areas of need. All regions housing more than 75 ethanol vehicles should be designated as an Area of Emphasis. This includes Columbia (707), Charleston (143), Greenville-Spartanburg (101), and Beaufort (89).

A second phase of development is also suggested. With large numbers of AFVs located in Rock Hill, Myrtle Beach, Florence and Greenwood, these areas should be designated as Secondary Areas of Emphasis.

The construction of infrastructure in these areas will provide a grid across the state from which further development could grow. It is thought that beginning the development of infrastructure along the I-26 corridor first, will best help attain the objectives of EPAct92 because of the presence of a large number of E-85 capable vehicles. Further development in the areas of the state not served by I-26 will be needed to achieve full utilization of alternative fuels.

There are a number of strategies that could be pursued to promote alternative fuel infrastructure development and the use of alternative fuels in vehicles.

- Approach existing fuel providers and discuss the addition of an E-85 pump at their stations in desired locations.
- Endorse legislation that offers incentives for the building of alternative fuel infrastructure above those offered at the Federal level.
- Promote the use of alternative fuel vehicles by the private sector through tax or other incentives to increase the need for an alternative fuel supply.
- Reduce the State's allowed emission levels.
- Relieve full burden of taxes on AFVs.
- Offer a reduction in fees for City parking lots for AFVs.
- Establish preferred parking (Green Zones) in inner city, high congestion areas that are available only to AFVs.
- Offer a reduction in the initial licensing fees of AFVs.

- Require the use of alternative fuels in government contacts with various transportation providers.
- Expand the acquisition of AFVs to fleets (law-enforcement, school busses, etc.) not currently covered by federal mandates.

Conclusion

In order to achieve the full potential of alternative fuels in meeting the goals of reduced pollution and reduced dependence on foreign petroleum sources, significant changes are necessary. Most vehicle operators and fleets will embrace the use of alternative fuels in a situation where it is beneficial, or at least neutral, for cost and operations. However there is significant apathy toward using such fuels when it leads to increased costs, reduced vehicle performance, or inconvenient access to refueling facilities. While the federal government has taken significant strides forward in mandating the acquisition of AFVs, little or no action has been initiated at any level of government to promote infrastructure development. Thus, it is apparent that this development will only occur when it becomes cost beneficial to the open market, or when it occurs in response to government intervention such as mandates or incentives. Since an adequate infrastructure will take years to develop, initiatives to promote development are past due and should be started immediately.

Totals of Alternative Fuel Vehicle Survey

Appendix A-1

(By Organization Type) (By Fuel Type)

City Name	Federal	State	County	City	ZipCode	E-85	CNG	LPG	Other	Total
Bamberg	1	5			29003	6				6
Batesburg		1			29006	1				1
Bishopville		8			29010	6		2		8
Blythewood		1			29016	1				1
Camden		10			29020	8		2		10
Cameron		1			29030	1				1
Cayce	16				29033	16				16
Cordova		1			29039	1				1
Denmark		1			29042	1				1
Eastover	5				29044	5				5
Elgin		1			29045	1				1
Gilbert		1			29054	1				1
Heath Springs		1			29058	1				1
Holly Hill		1			29059	1				1
Hopkins		1			29061	1				1
Lexington		5			29071	1		4		5
Lexington		12	9		29072	21				21
Manning		6			29102	6				6
Newberry	1	8			29108	9				9
Orangeburg	1	11			29115	12				12
Orangeburg		5			29116	5				5
Orangeburg		10			29118	10				10
St. Matthews		4			29135	4				4
Santee		3			29142	3				3
State Park		4			29147	2	2			4
Sumter	39	10			29150	47		2		49
Sumter	1	5			29151	2	1	3		6
Shaw AFB	11				29152	11				11
W. Columbia	2	2			29169	4				4
W. Columbia	4	3			29170	8				8
W. Columbia		2			29172	2				2
Winnsboro		4			29180	2		2		4
Columbia	36	308			29201	311	25	6	1-EL	343
Columbia		31			29202	30	1			31
Columbia		18	12	12*	29203	35		7		42
Columbia		21			29204	19	1	1		21
Columbia		3			29205	3				3
Forest Acres	20				29206	20				20
Fort Jackson-Cola	65				29207	65				65
USC-Columbia	1	41			29208	35	1		6-EL	42

Fuel Type Codes

EL=Electric, RE=Unl/Reg or Ethanol, RN=Unl/Reg or Natural Gas, RP=Unl/Reg or Propane

Totals of Alternative Fuel Vehicle Survey

Appendix A-1

(By Organization Type) (By Fuel Type)

City Name	Federal	State	County	City	ZipCode	E-85	CNG	LPG	Other	Total
Columbia	1	1			29209	2				2
Columbia	4	92			29210	95	1			96
Columbia		3			29211	3				3
Columbia		27			29212	26	1			27
Columbia		2			29221	2				2
Columbia	2	11			29223	13				13
Columbia		24			29230	24				24
Columbia		1			29240	1				1
Columbia		2			29250	2				2
Columbia		2			29251	2				2
Spartanburg	1				29301	1				1
Spartanburg		3			29302	3				3
Spartanburg		12	16		29303	27	1			28
Spartanburg		7			29304	6		1		7
Spartabburg		2			29305	2				2
Spartanburg	19	3			29306	22				22
Clinton		11			29325	11				11
Enoree		1			29335	1				1
Gaffney		1			29340	1				1
Gaffney		1			29341	1				1
Gaffney		6			29342	4		2		6
Laurens		9	7		29360	15		1		16
Union	1	7			29379	6		2		8
Woodruff		1			29388	1				1
Charleston	8	1			29401	9				9
Charleston	1				29402	1				1
Charleston	4	6		1	29403	11				11
Charleston-AFB	8				29404	8				8
N.Charleston	5	28	30		29405	61	2			63
N.Charleston	7				29406	7				7
Charleston	23	9			29407	30	2			32
Charleston	3				29408	3				3
Charleston	1	11			29409	11			1-EL	12
Charleston	2				29412	2				2
Charleston		2			29415	2				2
N.Charleston	6				29418	6				6
N.Charleston		1			29420	1				1
Charleston		3			29422	3				3
Charleston		5			29425	5				5
Dorchester		1			29437	1				1

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Totals of Alternative Fuel Vehicle Survey

Appendix A-1

(By Organization Type) (By Fuel Type)

City Name	Federal	State	County	City	ZipCode	E-85	CNG	LPG	Other	Total
Edisto Island		1			29438	1				1
Folly Beach		1			29439	1				1
Georgetown	1	5			29440	6				6
Georgetown		1			29442	1				1
Goose Creek	7				29445	7				7
Moncks Corner		13			29461	13				13
Mt. Pleasant		1			29464	1				1
Ridgeville		3			29472	3				3
St. George		4			29477	4				4
Summerville			2		29483	2				2
Summerville		8			29484	8				8
Summerville		11			29485	11				11
Walterboro		3			29488	3				3
Wando		1			29492	1				1
Florence	2	22	3		29501	26	1			27
Florence	2	1			29502	2	1			3
Florence		1			29503	1				1
Florence		2			29505	2				2
Florence		17			29506	13	4			17
Bennettsville	3	3			29512	6				6
Cheraw		2			29520	2				2
Conway	1	23	8		29526	31		1		32
Conway		2			29528	2				2
Darlington		1			29532	1				1
Dillion		8			29536	8				8
Hartsville		5			29550	5				5
Hemingway		1			29554	1				1
Kingstree		18			29556	18				18
Lake City		1			29560	1				1
Latta		2			29565	2				2
Loris		1			29569	1				1
Mullins	2				29574	2				2
Surfside Beach		2			29575	2				2
Myrtle Beach	41	7			29577	47	1			48
N. Myrtle Beach		2		4	29582	6				6
Greenville	1	13		3	29601	13	4			17
Greenville	40	1			29602	41				41
Greenville		8			29603	8				8
Greenville	4	4			29605	8				8
Greenville		4			29606	4				4

Fuel Type Codes

EL=Electric, RE=Unl/Reg or Ethanol, RN=Unl/Reg or Natural Gas, RP=Unl/Reg or Propane

Totals of Alternative Fuel Vehicle Survey

Appendix A-1

(By Organization Type) (By Fuel Type)

City Name	Federal	State	County	City	ZipCode	E-85	CNG	LPG	Other	Total
Greenville	2	9			29607	9		2		11
Greenville		5			29611	3		2		5
Greenville	1	2			29615	3				3
Abbeville		8			29620	8				8
Anderson	43	3			29621	45	1			46
Anderson		9	37	1	29622	47				47
Anderson		1			29623	1				1
Anderson	1				29624	1				1
Anderson		3			29625	3				3
Belton	1	1			29627	2				2
Calhoun Falls		2			29628	2				2
Clemson		34			29634	33	1			34
Easley		1		1	29640	1			1-EL	2
Greenwood		13			29646	10	2	1		13
Greenwood		1			29648	1				1
Greenwood		2			29649	2				2
Greer	3	1			29651	4				4
Hodges	1				29653	1				1
Marietta		1			29661	1				1
Mountains Rest		2			29664	2				2
Ninety Six		1			29666	1				1
Pendleton		7			29670	7				7
Pickens		7			29671	6		1		7
Seneca		1			29678	1				1
Simpsonville		4			29681	4				4
Taylors		1			29687	1				1
Walhalla		1			29691	1				1
Greenville		1			29698	1				1
Catawba		1			29704	1				1
Chester		15			29706	7		8		15
Lancaster		4			29709	4				4
Lancaster		6		1	29720	4	2	1		7
Lancaster		6			29721	5		1		6
Rock Hill	2	6		3	29730	10	1			11
Rock Hill		11			29731	6	1	4		11
Rock Hill		7			29732	7				7
York	1	11	3		29745	15				15
Aiken		25	4		29801	20	3	6		29
Aiken		3			29802	2		1		3
Aiken	1	2			29803	3				3

Fuel Type Codes

EL=Electric, RE=Unl/Reg or Ethanol, RN=Unl/Reg or Natural Gas, RP=Unl/Reg or Propane

Totals of Alternative Fuel Vehicle Survey

Appendix A-1

(By Organization Type) (By Fuel Type)

City Name	Federal	State	County	City	ZipCode	E-85	CNG	LPG	Other	Total
Aiken	415				29808	415				415
Allendale		8			29810	8				8
Barnwell		3			29812	3				3
Edgefield		3			29824	3				3
Langley		2			29834	2				2
McCormick	1	10			29835	10		1		11
North Augusta		2			29841	2				2
Plum Branch		3			29845	3				3
Windsor		4			29856	4				4
McCormick		1			29899	1				1
Beaufort		6			29901	6				6
Beaufort	7	11	14		29902	30	1	1		32
Beaufort	23				29904	23				23
Beaufort	28				29905	28				28
Brunson		1			29911	1				1
Hampton	1	6			29924	6	1			7
Port Royal	1	3			29935	3	1			4
Ridgeland		5			29936	5				5
Varnville		1			29944	1				1
Totals	**935**	**1,335**	**145**	**26**		**2,304**	**63**	**65**	**9**	**2,441**

Fuel Type Codes
EL=Electric, RE=Unl/Reg or Ethanol, RN=Unl/Reg or Natural Gas, RP=Unl/Reg or Propane

Location of Alternative Fuel Vehicles Survey

Organizational Information

Name: _____

Address: _____

City: _____

State: _____ Zip: _____

Phone: _____

Contact Person: _____

Title: _____

General Fleet Information

Total Size of Fleet: _____

Size of Alternative Fuel Fleet: _____

Number of Alternative Fuel Vehicles by Fuel Type

Electric: _____ CNG: _____

Ethanol-85: _____ LPG: _____

Methanol-85: _____ Other: _____

Current Refueling Usage

Station Name:			
Address:			
Government or Commercial:			

Fleet Breakdown

Codes for Alternative Fuel Types: Electric = EL, Ethanol-85 = ET, Methanol-85 = ME, Hydrogen = HY, Natural Gas = NG, Propane = PR, Other = OT.

Classification Codes for Ownership: Owned by Organization = O, Leased = L.

Tag no.	Year	Make	Model	O/L	Fuel Type	Location (by Zip)

Tag no.	Year	Make	Model	O/L	Fuel Type	Location (by Zip)

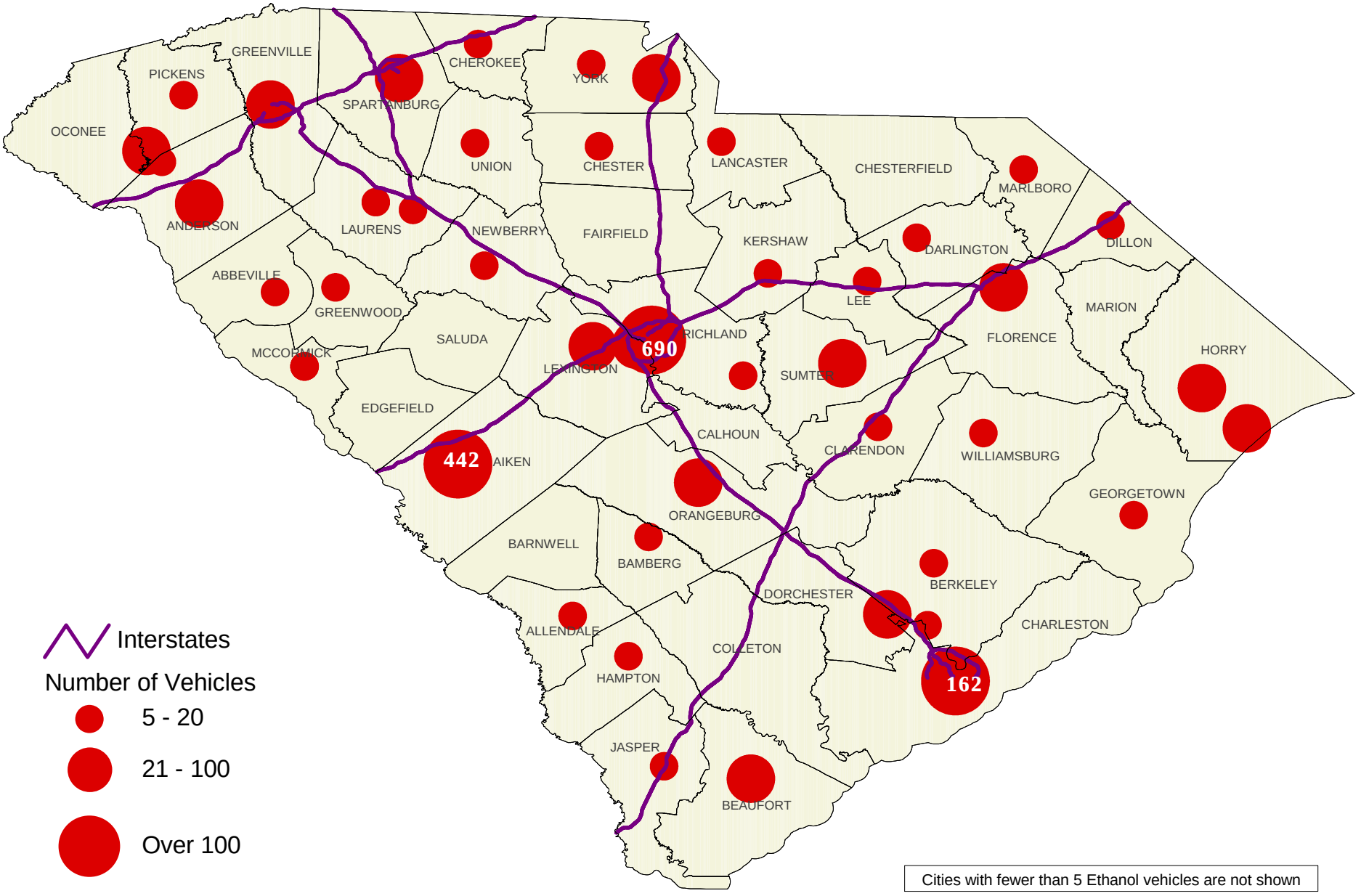
Current Alternative Fuel Infrastructure within South Carolina

Fuel Type	Zip Code	Station Name	Storage Capacity (gal)	Wright Express
LPG	29078	Suburban Propane-Lugoff	1000	
LPG	29456	Lowcountry Ace Hardware	1000	
LPG	29461	Fuel Deport		
LPG	29006	Palmetto Propane	180,000	
LPG	29640	Synergy Gas-Easley	90,000	
LPG	29654	Synergy Gas-Honea Path	30,000	
LPG	29925	Suburban Propane-Hilton Head	60,000	
LPG	29526	Waccamman Hardware		
LPG	29405	AmeriGas-Charleston	120,000	
LPG	29464	AmeriGas-Mt. Pleasant	500	
LPG	29470	Revenel Ace Hardware	1000	
LPG	29115	Suburban Propane-Orangeberg	18,000	
LPG	29172	Suburban Propane-W. Columbia		
LPG	29010	Suburban Propane-Bishopville	30,000	
LPG	29036	Suburban Propane-Chapin	30,000	
LPG	29059	Suburban Propane-Holly Hill	36,000	
LPG	29108	Suburban Propane-Newberry	46,000	
LPG	29161	Suburban Propane-Timmonsville	1000	
LPG	29151	Suburban Propane-Sumter	76,500	
LPG	29360	Suburban Propane-Laurens	60,000	
LPG	29483	Suburban Propane-Summerville	60,000	
LPG	29512	Suburban Propane-Bennettsville	60,000	
LPG	29536	Suburban Propane-Dillion	30,000	
LPG	29571	Suburban Propane-Marion	30,000	
LPG	29620	Suburban Propane-Abbeville	320	
LPG	29646	Suburban Propane-Greenwood	500	
LPG	29832	Suburban Prpane-Johnston	18,000	
LPG	29803	United Eneregy Distributors	6000	X
BioDiesel	29803	United Eneregy Distributors	25,000	X
E-85	29803	United Eneregy Distributors	25,000	X
E-85	29201	Department of Health and Environment Control	10,000	X
CNG	29731	York County Natural Gas Authority*	Fast Fill	
CNG	29731	City of Rock Hill*	Slow Fill	
CNG	29634	Clemson University*	Slow Fill-2800psi	
CNG	29601	Service Center-City of Greenville*	Slow Fill	
CNG	29201	SCE&G-Assembly Street**	90/10minutes	X

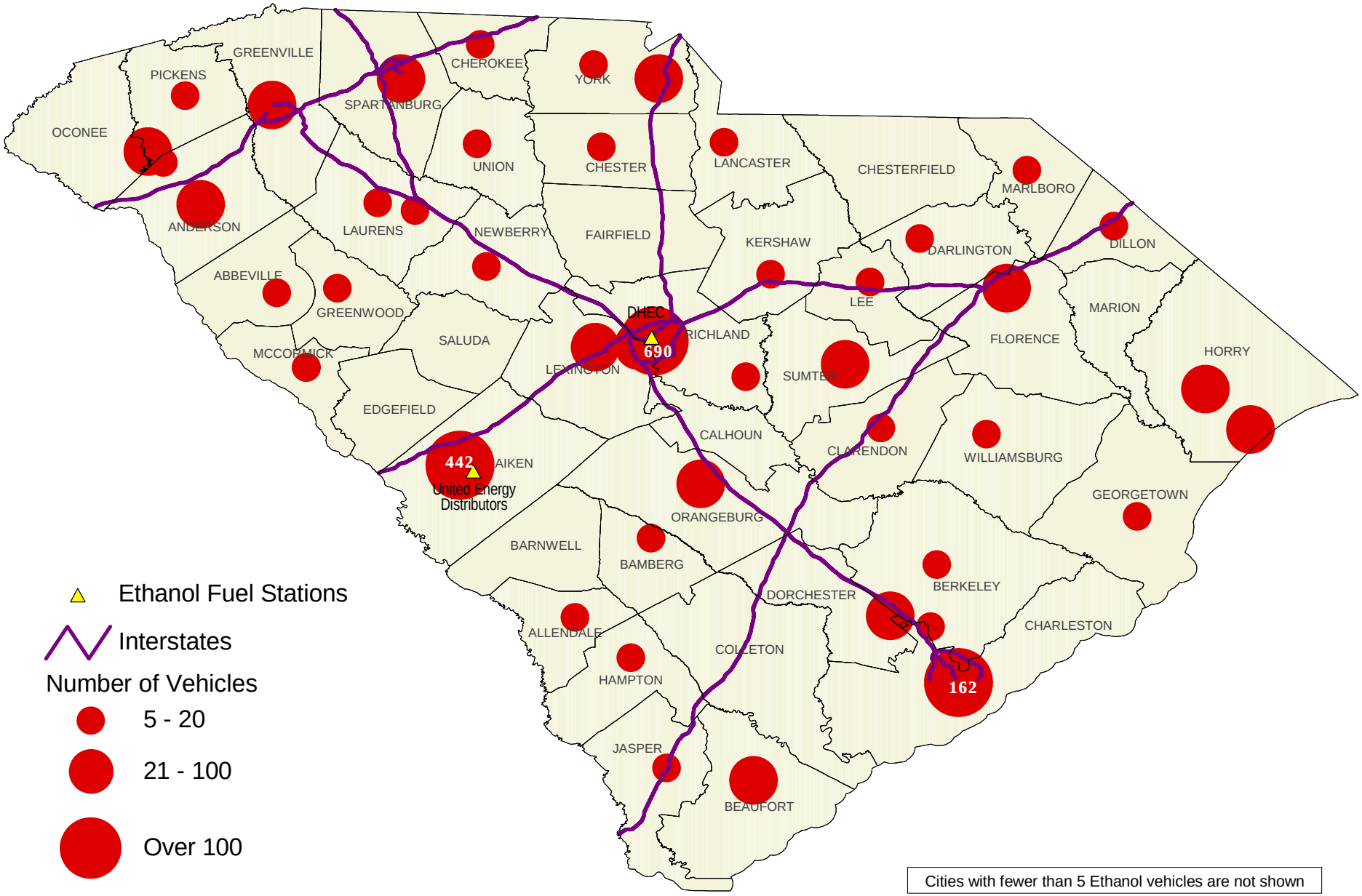
*Private Site
**Future Site

Fuel Type Codes
LPG=Propane, E-85=Ethanol-85, CNG=Compressed Natural Gas

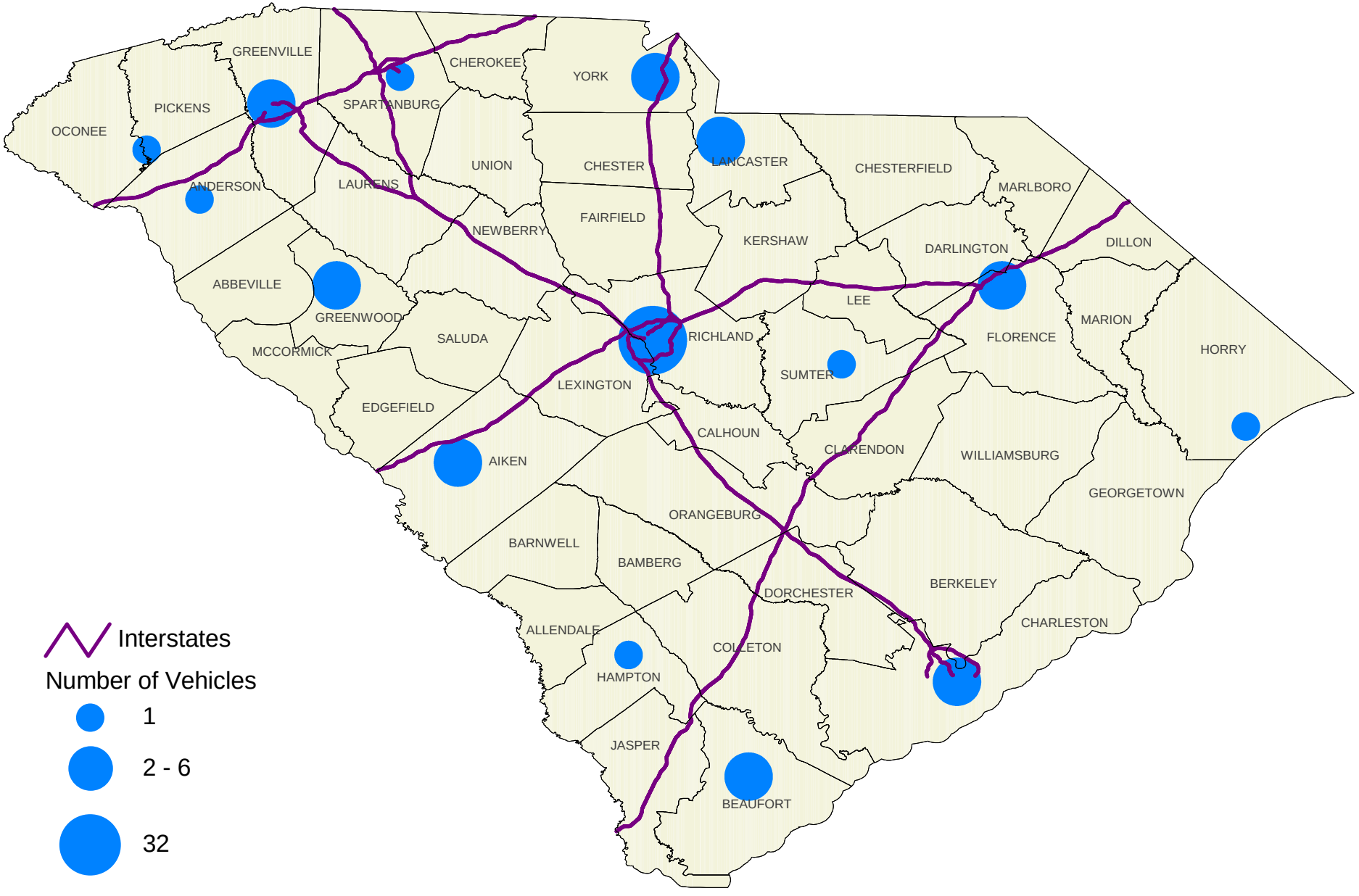
Appendix C-1: Concentrations of Ethanol Vehicles



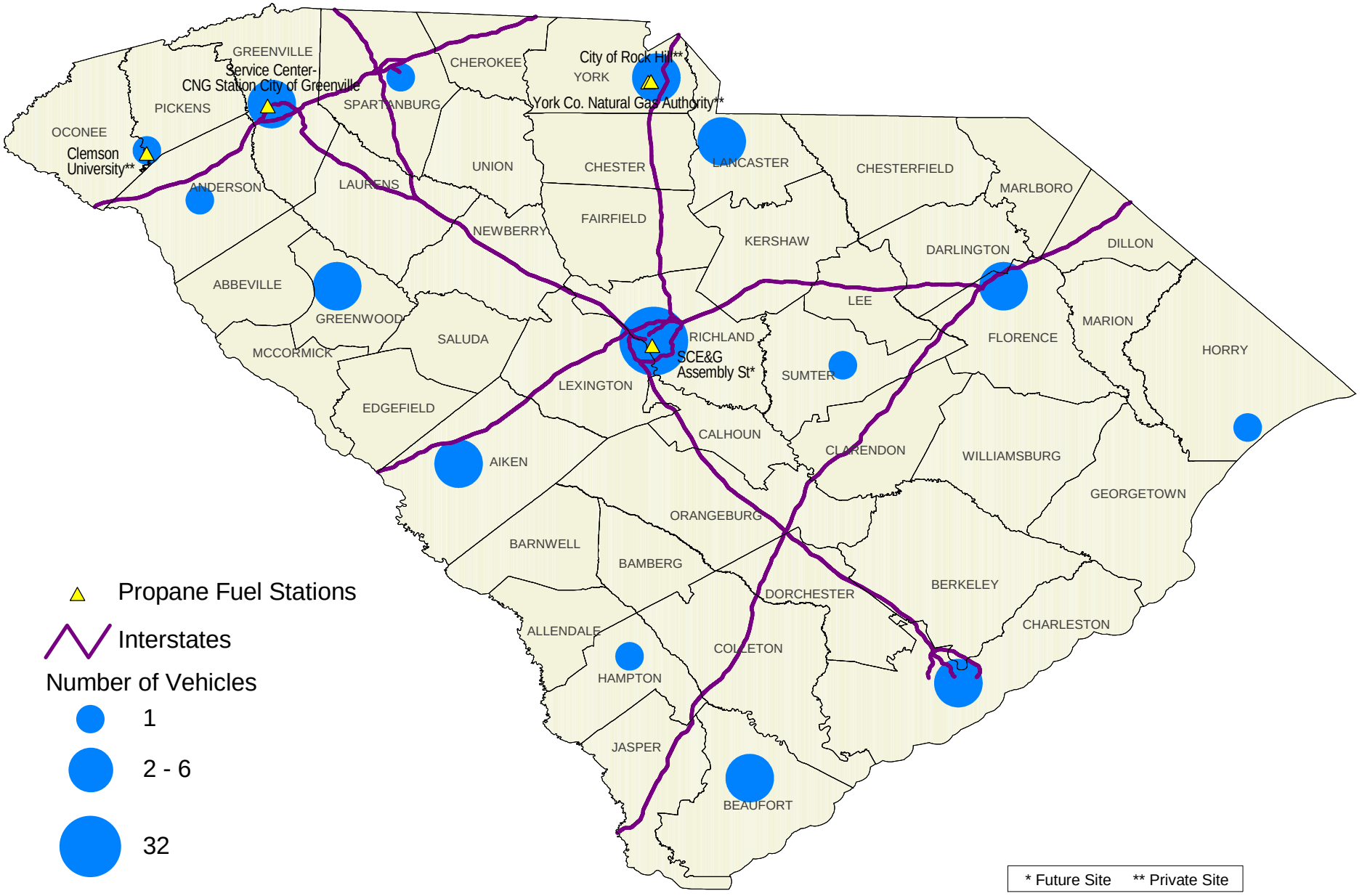
Appendix C-2: Ethanol Vehicle Concentrations with Fuel Infrastructure



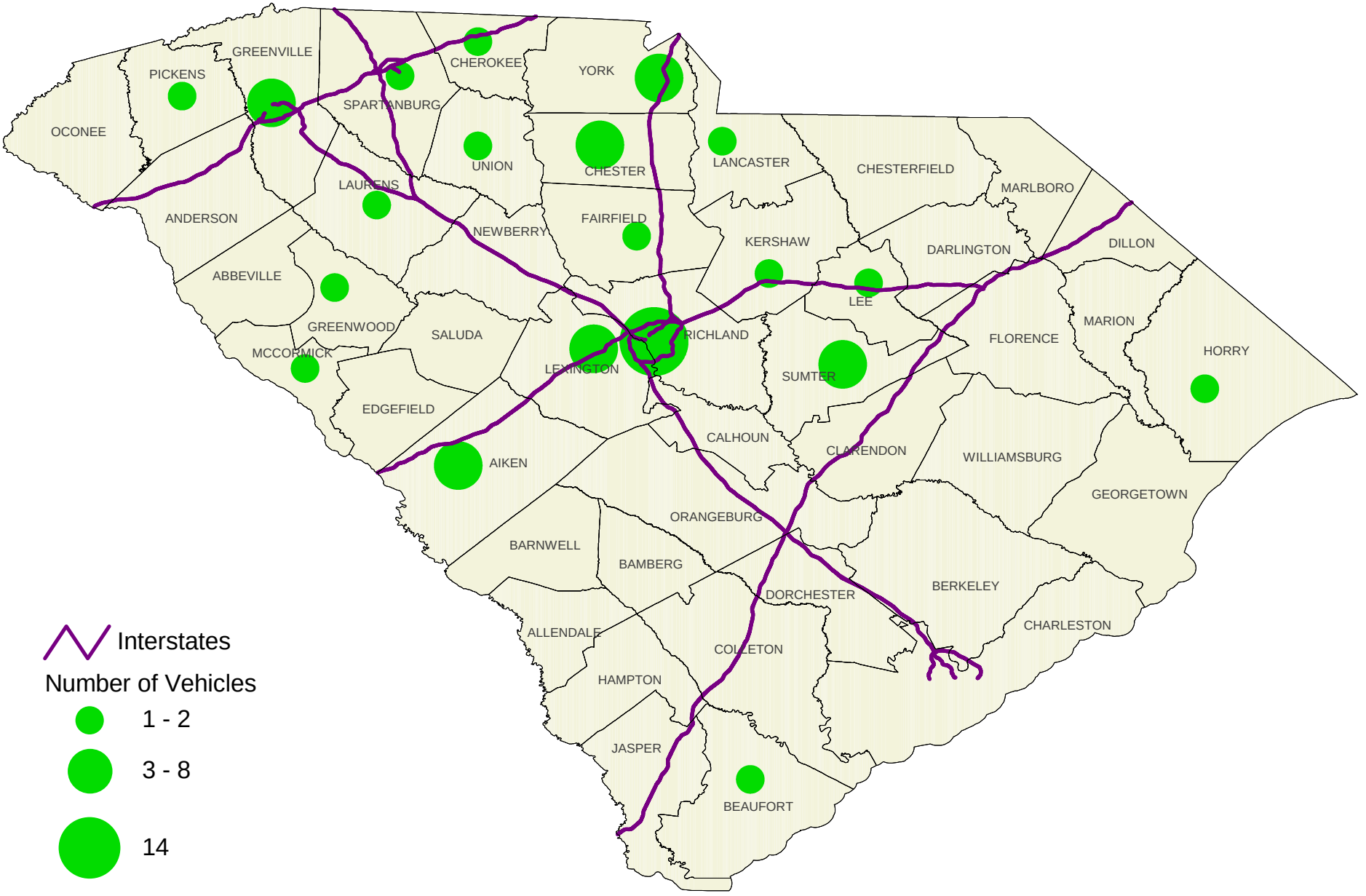
CONCENTRATIONS OF NATURAL GAS VEHICLES



Appendix C-4: Concentrations of Natural Gas Vehicles with Fuel Infrastructure



Appendix C-5: Concentrations of Propane Vehicles



Appendix C-6: Concentrations of Propane Vehicles with Fuel Infrastructure